

# SECRETS OF A GUN

The Famous French 75 and Its Wonderful Mechanism.

IT HAS TWO HIDDEN DEVICES.

These Are the Fuse Setter and the Recoil Absorber, and They Make This Monster Weapon a Most Fearful Engine of Death and Destruction.

What is a 75? By this is conversationally understood a French field gun, the caliber, or interior diameter of the bore, of which is seventy-five millimeters. Incidentally it is the finest man killing machine the world has yet known.

In 1898 France surprised the armies of the world by the introduction of an artillery weapon which till then had only existed in the dreams of experts.

Till this period the slowness of artillery fire was due to the fact that after the gun was laid and fired the shock of discharge so upset the aim that the gun had to be reloaded for a second shot. The rapidity of fire thereupon became a matter of how quickly and accurately a gun could be laid by the personal skill of the layer. The French, seeking artillery progress and confronted with the inexorable shortness of their conscripts' period of training, sought to improve in mechanism what they could not improve in personal skill.

Briefly, the new French field gun of 1898 ceased to be attached to its axle-tree, but was attached instead to a buffer in a cradle, which not only absorbed the shock of recoil, but ran back the gun so exactly into its former position that no second laying was necessary.

The primary trouble of laying having been got over, rapidity of fire appeared to have been attained. Experiments then proved that, though a rapid rate of fire was possible, this rate was only as fast as that at which the gunners could adjust the fuses of the shells.

How now improve the rate of fuse setting? This task was and is a matter of meticulous accuracy, needing careful training to be done correctly. Moreover, it could not be hurried, since a shell badly fused by ever so little was not only innocuous to the enemy, but was a danger to one's own side. Once more the French put aside any idea of bricking up the personnel and invented a machine to set the fuse. The details of this fuse setter are still a secret. Let it suffice that it is simple, accurate and very rapid in its work. Thanks to it and to the steadiness of the gun after each discharge, the French field gun is easily capable of twenty-five aimed rounds a minute. One more word about the recoil absorber and the secret thereof. The

recoil is taken up by a cylinder beneath the gun, which contains a combination of glycerin, compressed air and springs. It is this combination and the exact proportions thereof which make the secret of the gun. It is not even ascertainable from a captured gun, since if you take a cold chisel to it and try to examine the works by opening the buffer the compressed air escapes, and the secret which lies in its density evaporates with it.

Having solved the question of the rate of fire you would have thought that the French would have been content. Not they! Range and accuracy were successively taken in hand. Muzzle velocity, which, after all, means range, was increased not by increasing the charge and with it the thickness of the gun that withstood it, but by lengthening the gun to a hitherto unheard of extent and giving it a slow burning propellant.

The temptation to put in a lighter shell and so get it farther on the same bang was successfully resisted. The designers never lost sight of the fact that the primary object of the gun was to deliver death to its enemies at the greatest speed, range and effectiveness possible. So they concentrated their energies on a man killing shrapnel which in the end weighed sixteen pounds and left the gun on its long journey at the unprecedented pace of 1,739 foot-seconds.

And there you have the present shrapnel.

Tactics here began to get mixed up with mechanics and ballistics. It was pointed out that troops would not always remain in the open to be whiffed out of existence by shrapnel. Rather would they get under cover at what speed they might. So a shell to deal with entrenchments, buildings and fortifications was indicated. Here again careful thought showed the need of accurate gunnery and a still higher velocity in the shell which, being more local in its effects, could not be allowed the same latitude in its action as its shrapnel confere.

So a high explosive shell weighing only 11.68 pounds was introduced. Thanks to the chemists this time, its contents were of such a startling nature that its weight became a secondary consideration. It raced away on its mission at a velocity at that time unequalled even by the latest small bore rifle, and when it exploded its melinite charge blew great holes in the scenery. — Pousse Cailloux in Blackwood's Magazine.

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# The Education of Marriage

BY ELINOR MARSH

Jim Hawks was an ironworker. He was twenty-two years old and had a prospect of a long life ahead. He was a hard worker and very saving, his idea being to get a nest egg—for nature leads us all to build nests, and man can't do it as the birds do, by getting together a few straws and other such material. He must have money to pay for his domicile.

Young persons—very young persons—don't look upon matrimony with the misgivings of their elders. Jim's idea of a home was a comfortable house with a very nice wife in it, or at least a suit of rooms. He was to own the house and the wife and the furniture. The wife was to be there to minister to his wants and comforts.

Jennie Owens was the daughter of a widow. Jennie was twenty years old. She was a high school graduate and aimed partly to support herself and her mother, who had a little income, by stenography and typewriting. But Jim Hawks came along, talked very sweetly to her and in time induced her to marry him. Both wanted a home; both wanted to fulfill the destiny nature intended for them. This was all very well, but neither had been educated to matrimony.

Jim had his preconceived notions of what his wife should be to him, and she had her preconceived notions of what he should be to her. As soon as the honeymoon ended these preconceived notions began to clash. Jim's habit of saving money did not grow less with two to provide for. He kept control of the cash and pinched his wife for small expenditures. He had not been used to considering the requirements of any one except himself and needed practice to become used to considering those of another. He was not exactly what his wife expected to find him, and she thought that in certain respects she might make him over. She remained in their three rooms all day and when evening came needed a change of scene, to say nothing of recreation. Jim worked hard all day and when evening came desired to rest. Besides, going out required some expenditure. If only car fare. And when it was necessary to spend money he was used to spending it on himself. These things caused scraps, and the scraps gradually grew to be quarrels. Jennie usually had the right of the question, but did not know how to use it so as to impress her husband that he was in the wrong. While he was wrong in trying to dominate her, she acted uneducately.

One evening Jennie desired Jim to go with her to an evening party given by one of her friends. Jim wouldn't go.

One she said would go alone and asked him to come to bring her home. He made no reply. She went, and since he did not come for her she remained at her friend's all night. She should have gone home early the next day, but instead spent the day and the night with her mother. On returning the next day she found her home deserted.

Here was a break between two persons who, if they could have been prepared for their parts, might have got over this early married period, have gradually become used to each other and settled down into a happy married life. What a contrast between this antagonism and the mutual dependence of ten or twenty years later!

Jennie made an effort for a reconciliation, but since she did not accompany it by a confession that she, and she only, was in the wrong Jim paid no attention to her pleadings. Then her mother advised her to let him alone. If he ever came to realize that he was giving up that which was pleasing and ennobling for his preconceived notions of what a wife should be to him he would very likely conquer his pride and return to her. If not she could do no more than she had done and the matter must adjust itself or remain unadjusted without any further action on her part.

For awhile Jim persuaded himself that he had acted the part of a strong man in asserting himself and in refusing to live with a woman who, as he expressed it, would "take the bit in her teeth and run away with everything." But he had been very happy for awhile in his home with his wife. His mother had taken his part in his disagreements with his wife, and he went to live with her. But he had reached an age when a man craves his own roof-tree and hearthstone, and he was not satisfied. He met with an accident in his work, and though his mother cared for him tenderly, he pined for his wife. Between her and him was a deadly silence. Jennie did not try to win him back to her. He was a man of strong will and must go his own way. Besides, no reunion could last unless he became satisfied that his wife had rights as well as himself.

One day Jennie heard a click at the gate and, looking out through a window, saw her husband coming. With beaming eyes and a smile she went to meet him.

"Jennie," he said, "I treated you brutally. Will you forgive me?"

"It was all my fault," she replied.

"You'll have to stand a lot if you come back to me. I've a bad temper."

"I'll try to correct my faults."

There were quarrels after that between them, but Jim made a rule that they must be made up the day they occurred. In time they came to regard differences on the same footing as other trials and the sooner mended the better.

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No. 141, Wilcox, Gainesville and Palatka to Ocala, 11:15 a. m.  
No. 40, St. Petersburg to Jacksonville, 12:54-1:14 p. m.  
No. 48, Homosassa to Ocala, 1:05 p. m.  
No. 49, Ocala to Homosassa, 2:25 p. m.  
No. 39, Jacksonville to St. Petersburg, 2:36-2:40 p. m.  
No. 140, Ocala to Palatka, Gainesville and Wilcox, 4:10 p. m.  
No. 9, Jacksonville to Leesburg, 9:05 p. m.  
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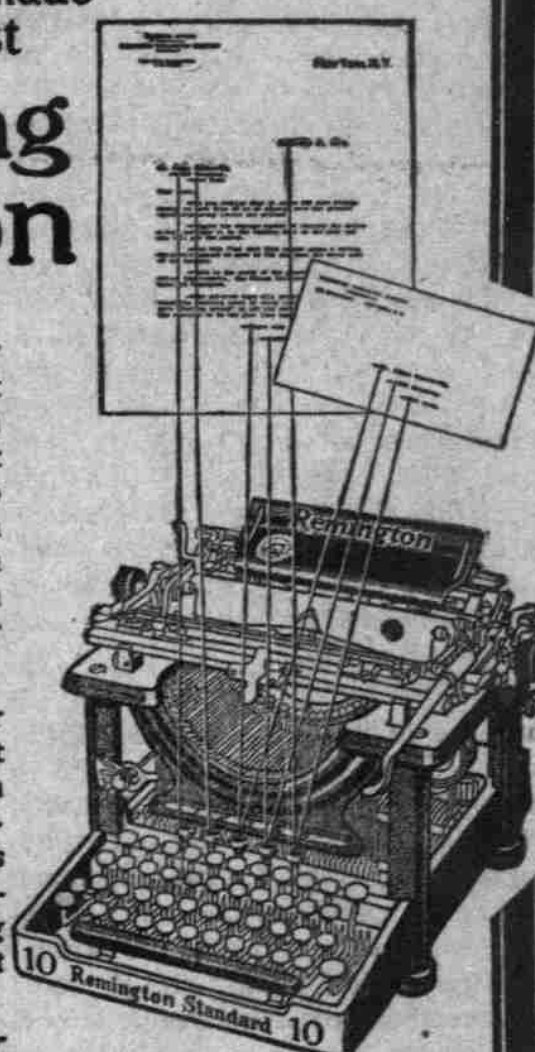
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